II. AMENDMENT TO THE CLAIMS

- ## COMPLETE LIST OF CLAIMS THAT ARE OR HAVE BEEN BEFORE THE OFFICE AFTER ENTRANCE OF THE AMENDMENTS MADE HEREIN

The following claims constitute a complete list of claims that are or have been before the office after entrance of the amendments made herein. Amendments to the claims are indicated in accord with Revised 37 C.F.R. §1.121. In accord with such regulation, the listing of claims set forth below replaces all prior versions, and listings, of claims in the application:

--CLAIMS AS PENDING IN THE APPLICATION WITH AMENDMENTS MADE HEREIN START ON NEXT PAGE--

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1.-12. (Canceled)

13. (PREVIOUSLY PRESENTED) The method of claim 38, wherein the step of producing a rare cell image mask signal further comprises: analyzing a histogram of luminance values of the color image signal representing the rare cell image; selecting for further processing, rare cell signal points having a luminance value above a last valley preceding a last peak of the histogram; and applying to the selected signal points a closing filter, excluding areas not fitting a predetermined size criterion, and applying a hole filling function.

14. (PREVIOUSLY PRESENTED) The method of claim 13, wherein the step of creating a selected rare cell signal further comprises: selecting for further processing, signal points having a saturation value above a first valley following a first peak of the histogram; applying to the selected signal points a closing filter, applying a hole filling function, and excluding areas including a border of the image, an erosion filter is applied, and a thick filter is applied, producing the selected rare cell signal.

15. (PREVIOUSLY PRESENTED) The method of claim 14, wherein the step of creating a rare cell signal further comprises: selecting for the rare cell signal, signal points coinciding with the selected rare cell signal, among a cluster of signal points lying within a predetermined size range, the cluster of signal points also having a hue value lying within a predetermined hue value range.

16. (PREVIOUSLY PRESENTED) The method of claim 15, further comprising: processing substantially only rare cell areas to generate a biologically identifying signal.

17. (PREVIOUSLY PRESENTED) The method of claim 16 , further comprising: acquiring an image of the body fluid or tissue smear; detecting in the acquired image the biologically identifying signal; and recording presence of the biologically identifying signal when coincident

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with a rare cell area from the rare cell data set or criteria.

18. (PREVIOUSLY PRESENTED) The method of claim 16, further comprising: acquiring an image of a rare cell area of a body fluid or tissue smear, the rare cell area defined by the rare cell data set; and recording presence of the biologically identifying signal in the rare cell area.

19.-30. (Canceled)

31. (PREVIOUSLY PRESENTED) The product of claim 39, wherein the step of producing creating a rare cell color image signal comprises: analyzing a histogram of luminance values of the color image signal representing the candidate blob; selecting for further processing, signal points having a luminance value above a last valley preceding a last peak of the histogram; and applying a closing filter to the selected signal points, then excluding areas not fitting a predetermined size criterion, then applying a hole filling function, producing the cell mask signal.

32. (PREVIOUSLY PRESENTED) The product of claim 39, wherein the step of creating a selected a rare cell image signal further comprises: analyzing a histogram of saturation values of the cell mask signal: selecting for further processing, signal points having a saturation value above a first valley following a first peak of the histogram; applying to the selected signal points a closing filter, then applying a hole filling function, then excluding areas including a border of the image, then an erosion filter is applied, then a thick filter is applied, producing the selected cell signal.

33. (PREVIOUSLY PRESENTED) The product of claim 39, wherein the step of producing a rare cell signal further comprises: selecting for the rare cell signal, signal points coinciding with the selected cell signal, which includes a cluster of signal points

lying within a predetermined size range, the cluster of signal points also having a

hue value lying within a predetermined hue value range.

34. **(PREVIOUSLY PRESENTED)** The product of claim 39, the sequence of instructions

further compromising the step of: processing substantially only rare cell areas to generate a

biologically identifying rare cell color image signal.

35. **(Canceled)**

36. **(PREVIOUSLY PRESENTED)** The product of claim 39, the sequence of

instructions further compromising the steps of: acquiring a color image of a rare

cell area from among a body fluid or tissue smear, the rare cell color image area

identified by the rare cell data set; and recording presence of the biologically

identifying signal in the rare cell area.

37. **(PREVIOUSLY PRESENTED)** The method of claim 39 wherein the body fluid is

maternal blood and the rare cell is a fetal cell.

38. **(CURRENTLY AMENDED)** A computer-controlled method for rare cell image

identification, comprising:

(i) digitally receiving a color image signal of an unenriched body fluid or tissue sample;
~~and~~

(ii) transforming the color image signal from a native color space represented by

coordinate signals having values representing Red, Green and Blue (RGB) intensity to a

processing color space represented by coordinate signals having values representing Hue,

Luminance and Saturation (HLS) magnitude whereby a candidate blob may be readily

identified by analyzing one coordinate signal thereof; ~~and~~

(iii) ~~(ii)~~ forming the rare cell image color signal in the transformed color image signal of

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the candidate blob, wherein <u>rare cell</u> image <u>color signal</u> ~~characteristics~~ <u>characteristic</u> values [[to]] which <u>may serve as</u> predetermined <u>rare cell image</u> selection criteria ~~may be applied~~ appear more prominently in one or more coordinate signals thereof; and

(iv) ~~(iii)~~ producing a rare cell image mask signal and storing the mask signal in the computer memory, ~~for eliminating~~ <u>so as to eliminate</u> from the candidate blob image signal those portions thereof not defining the rare cell, <u>and identify the rare cell image</u>.

39. (CURRENTLY AMENDED) A computer software product comprising a computer-readable storage medium containing a sequence of computer directed steps to selectively identify a rare cell image, which comprise:

(i) digitally receiving a rare cell color image signal in a candidate blob of an unenriched body fluid or tissue sample;

<u>(ii)</u> transforming the color image signal from a native color space represented by coordinate signals having values representing Red, Green and Blue (RGB) intensity to a processing color space represented by coordinate signals having values representing Hue, Luminance and Saturation (HLS) magnitude whereby a candidate blob may be readily identified by analyzing one coordinate signal thereof; ~~and~~

<u>(iii)</u> ~~(ii)~~ forming the rare cell image color signal in the transformed color image signal of the candidate blob, wherein <u>rare cell</u> image <u>color signal</u> ~~characteristics~~ <u>characteristic</u> values [[to]] which <u>may serve as</u> predetermined <u>rare cell image</u> selection criteria ~~may be applied~~ appear more prominently in one or more coordinate signals thereof; and

(iv) ~~(iii)~~ producing a rare cell image mask signal and storing the mask signal in the computer memory, ~~for eliminating~~ <u>so as to eliminate</u> from the candidate blob image signal

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those portions thereof not defining the rare cell, and identify the rare cell image.

40. **(PREVIOUSLY PRESENTED)** The method of claim 38, wherein the digitized color image signal is derived through a computer-aligned plurality of microscope objectives from a large field sample.

41. **(PREVIOUSLY PRESENTED)** The method of claim 38, wherein the rare cell is present at a concentration of 0.001%, 0.0001%, 0.00001%, or 0.000001%.

42. **(PREVIOUSLY PRESENTED)** The product of claim 39, wherein the digitized color image signal is derived through a computer-aligned plurality of microscope objectives from a large field sample.

43. **(PREVIOUSLY PRESENTED)** The product of claim 39, wherein the rare cell is present at a concentration of 0.001%, 0.0001%, 0.00001%, or 0.000001%.

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